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⑱ 発明者 乾田 和夫 神奈川県川崎市中原区上小田中1015番地 富士通株式会社  
内

⑲ 発明者 吉崎 比呂志 神奈川県川崎市中原区上小田中1015番地 富士通株式会社  
内

⑳ 発明者 吉岡 明彦 神奈川県川崎市中原区上小田中1015番地 富士通株式会社  
内

㉑ 出願人 富士通株式会社 神奈川県川崎市中原区上小田中1015番地

㉒ 代理人 弁理士 井桁 貞一

明細書

1 発明の名称

図形選択処理方式

2 特許請求の範囲

図形処理部と、図形検索部と、表示部と、  
入力部を有し、

該図形処理部は、図形データ(3)に従って、該  
表示部(4)に所定の図形表示を行い、該入力部(5)か  
らの所定の選択指示に従って選択した図形を処理  
対象として指定の処理を実行し。

該入力部から所定の次選択指示入力を受けた場  
合に、該図形検索部(6)を起動し。

該図形検索部は、現に選択されている該図形  
と所定の接続関係にある図形を、接続関係情報(44)  
から検索して該図形処理部に通知し、

該図形処理部は該通知された図形を新たに選  
択した図形として処理するように構成されてい  
ることを特徴とする図形選択処理方式。

3 発明の詳細な説明

(概要)

図形を処理する計算機における、処理対象図形  
を選択する処理に関し。

選択した図形につながる図形を、次に自動的に  
選択して、選択操作を容易にした図形選択処理方  
式を目的とし、

図形処理部と、図形検索部と、表示部と、入力  
部を有し、該図形処理部は、図形データ(3)に従って、  
該表示部(4)に所定の図形表示を行い、該入力部(5)から  
の所定の選択指示に従って選択した図形を処理対  
象として指定の処理を実行し、該入力部から所定  
の次選択指示入力を受けた場合に、該図形検索部  
を起動し、該図形検索部は、現に選択されている  
該図形と所定の接続関係にある図形を、接続関係  
情報から検索して該図形処理部に通知し、該図形  
処理部は該通知された図形を新たに選択した図形  
として処理するように構成する。

(実際上の利用分野)

本発明は、図形を処理する計算機における、処理対象図形の選択、特に間違する図形を順次処理する場合等の場合に図形の指定を容易にする図形選択処理方式に関する。

(従来の技術と発明が解決しようとする課題)

第3図は図形処理システムの構成例を示し、図形処理部1は入力部2から入力される指令、位置指定等の入力に従って図形データ3を生成し、表示部4に図形を表示するように制御する。

第4図は表示装置14の画面の表示例を説明的に示し、図示のような図形を作成し、例えばその中の円や多角形で表される図記号を変更するような場合には、図に矢印の表示で示される画面上のカーソルを入力部3からのマウス等の適当な人力で、所要の図記号の位置へ移動し、所定の選択指示を入力することにより、その図記号等を処理対象として選択したものとして図形処理部1に認識される。

(課題を解決するための手段)

第1図は、本発明の構成を示すブロック図である。

図は図形選択処理方式の構成であって、図形処理部10と、図形検索部11と、表示部4と、入力部12を有し、図形処理部10は、図形データ3に従って、表示部4に所定の図形表示を行い、入力部12からの所定の選択指示に従って選択した図形を処理対象として指定の処理を実行し、入力部12から所定の次選択指示入力を受けた場合に、図形検索部11を起動し、図形検索部11は、現に選択されている該図形と所定の接続関係にある図形を、接続関係情報14から検索して図形処理部10に通知し、図形処理部10は該通知された図形を新たに選択した図形として処理する。

(作用)

以上の処理方式により、ある図形を選択した後は間違する図形が自動的に選択されるので、選択操作が簡単になる。

ここで要すれば図形処理部1は選択されたことを示すために、最後図形の表示を輝度を変える等の手段で他の図形と区別して表示する(図では、この表示状態を斜線の網かけで示す)。

次に例えば、選択した図記号等の図形に対する処理(例えば移動、更新等)のための指令等を入力することにより、図形処理部1はその図形の選択が決定したものとして、該図形に対する所要の処理を実行する。

このようにして図形の変更処理の操作を行う場合に、図示の接続された図記号のような場合には、1つの図記号を処理した後、次にそれと既で接続された他の図記号を処理するというように、接続関係にある図形を順次処理する必要のある場合がしばしば生じる。

本発明は、そのような場合において、選択した図形につながる図形を、次に自動的に選択して、選択操作を容易にした図形選択処理方法を目的とする。

(実施例)

本発明により、第1図の図形処理部10はその図形データ3と共に、接続関係情報14を生成するものとし、図形データ3は例えば各図記号、及び図記号を結ぶ線について、各図形ごとの識別名とその図形情報からなり、又接続関係情報14は例えば各識別名で表される図記号をリンクすることにより図記号間の接続関係を表すようになリストとする。

システムの利用者は、最初に変更処理対象の図記号等を選択する場合には、例えば従来と同じにカーソルを所要の図形の位置に移動して指示するものとする。

このようにして1図形を選択した状態において、所定のキー入力等により入力部12から次選択指示を入力すると、図形処理部10は図形検索部11を起動し、現に選択されている図形の識別名を通知する。

そこで図形検索部11は接続関係情報14を、通知された選別名で検索して、当該図形と接続してい

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る圓形の識別名をリストから得、圓形処理部10に返すので、圓形処理部10はその識別名の圓形が、処理対象として新たに選択されたものとして、入力部12からの指示に従う処理を実行するが、その場合に例えば先ず選択された圓形の表示を、選択状態を示す所定の表示にして確認できるようとする。

ここで元の選択圓形と同列につながる圓形が複数ある場合には、圓形検索部11は一定の順序、例えば接続関係情報のリストつながる順序で、1圓形を取り出すものとし、前記のようにして選択状態の表示を利用者が見て、選択を要しない場合には、例えば更に次選択指示を入力することにより、次の順位でつながる圓形を順次選択するように構成する。

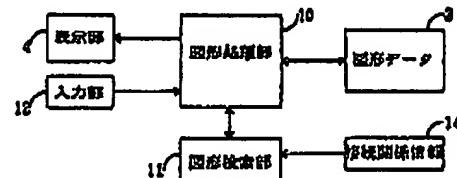
第2図は、以上の処理による表示画面の例を示し、第2図間に示すように中央の円状の圖記号が選択されている状態で、次選択指示を入力することにより、例に示すように圓記号につながる三角形の圖記号が選択される。この圖記号でなく、他

の三角形を選択したい場合、或いはこの三角形圖記号の処理を終わった場合には、更に次選択指示を入力することによって、(b)のように他の三角形圖記号が選択される。

以上の説明では、次選択指示で圖記号のみが選択されるようにしたが、圖記号をつなぐ線も選択対象に含めるようとしてもよく、その場合には必要に応じて接続関係情報14を線を含めるように構成することにより、以上と同様にして処理することができる。

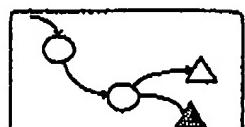
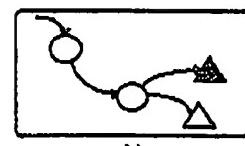
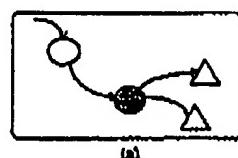
#### (発明の効果)

以上の説明から明らかのように本発明によれば、圓形を処理する計算機における、処理対象圓形を選択する場合に、選択した圓形につながる圓形を、次に自動的に選択して、選択操作を容易にするので、圓形処理作業の効率を向上するという考へた工芸的効果がある。



本発明の構成を示すブロック図

第1図



本発明を実施する画面の説明図

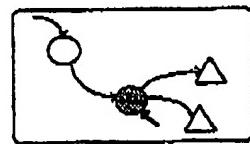
第2図

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従来の構成例を示すブロック図

第3図



従来の画面の説明図

第4図

# PATENT ABSTRACTS OF JAPAN

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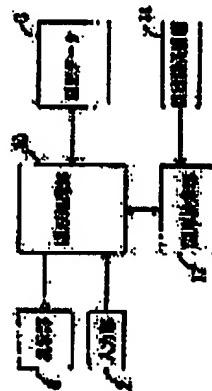
(21)Application number : 01-270698 (71)Applicant : FUJITSU LTD  
(22)Date of filing : 18.10.1989 (72)Inventor : YABUTA KAZUO  
MIYAZAKI HIROSHI  
YOSHIOKA AKIHIKO

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## (54) GRAPHIC SELECTION PROCESSING SYSTEM

### (57)Abstract:

**PURPOSE:** To simplify selecting operation by selecting an optional graphic and then automatically selecting a graphic relating to the selected graphic.  
**CONSTITUTION:** When the succeeding selection instruction is inputted from an input part 12 by a prescribed key in the selected state of one graphic by a cursor, a graphic processing part 10 starts a graphic retrieving part 11 and informs the identification (ID) name of the graphic selected at present. The retrieving part 11 retrieves connecting relation information 14 by means of the informed ID name, obtains the ID name of the graphic connected to the graphic concerned from a list and returns the obtained graphic to the processing part 10. The processing part 10 regards the graphic of the sent ID name as a newly selected graphic and executes processing based upon an instruction inputted from the input part 12.



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### LEGAL STATUS

[Date of request for examination]  
[Date of sending the examiner's decision of rejection]  
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]  
[Date of final disposal for application]  
[Patent number]  
[Date of registration]  
[Number of appeal against examiner's decision of rejection]  
[Date of requesting appeal against examiner's decision of rejection]  
[Date of extinction of right]

Our ref: 990567 IDS

Japanese Patent Application: Publication No. H03-131981

Japanese Patent Application: Publication date: June 5, 1991

Patent Application: Application No. H01-270696

Patent Application Date of filing: Oct. 18, 1989

Applicant: Fujitsu Ltd.

### Specification

1. Title of Invention: Method for Image Selection Process

#### 2. Scope of claim(s)

Claim                  Method for an image selecting process employed by an apparatus comprising an image-processing unit (10), an image-searching unit (11), a display unit (4) and an input unit (12), the method comprising:

causing the image-processing unit (10) to have the display unit (4) display images accordingly to image data pieces (3), to select an image accordingly to a selection instruction of a preassigned form input via the input unit (12) and to perform a process of specifying the selected image as a processed-object;

activating the image-searching unit (11) when receiving a next selection instruction of a preassigned form;

causing the image-searching unit (11) to identify an image that has a predetermined connection relation with the currently selected image by making reference to a connection relation data set (14) and to report thus identified image to the image-processing unit (10); and

causing the image-processing unit (10) to apply the preassigned type of processing by regarding newly the reported image as the selected image.

#### 3. Detailed explanation of invention

##### (Summary)

The present invention is related with a process that is associated with operation of an image-processing computer and is for selecting an image for applying to the image a type of processing by the image-processing computer.

The present invention aims at offering a method for an image selection process, according to which an image connected to a currently processed image is automatically selected as the image to be processed next so as to simplify a required selection operation.

The invention method is for an apparatus comprising an image-processing unit (10), an

image-searching unit (11), a display unit (4) and an input unit (12), and the method comprises:

- causing the image-processing unit (10) to have the display unit (4) display images accordingly to image data pieces (3), to select an image accordingly to a selection instruction of a preassigned form input via the input unit (12) and to perform a process of specifying the selected image as a processed-object;
- activating the image-searching unit (11) when receiving a next selection instruction of a preassigned form;
- causing the image-searching unit (11) to identify an image that has a predetermined connection relation with the currently selected image by making reference to a connection relation data set (14) and to report thus identified image to the image-processing unit (10); and
- causing the image-processing unit (10) to apply the preassigned type of processing by regarding newly the reported image as the selected image.

(Field of industrial application)

The present invention is concerned with a selection of an image subjected to a type of processing performed by an image-processing computer. It is concerned, in particular, with a method for an image selection process that simplifies the image-specifying operation required when processing a number of mutually related images in succession.

(Prior art technology and problem to be solved by invention)

An example configuration of an image processing system is shown in Fig.3. According to the configuration, the system is controlled so as the image-processing unit 1 generates an image-related data set 3 accordingly to an instruction such as a position-specifying instruction input via an input unit 2 and a display unit 4 displays an image.

The drawing in Fig.4 illustrates an example display on a screen of the display unit 4. When having produced an image such as the one shown in the drawing and changing an image sign or image signs such as those represented by circles and polygons in the image, these image signs that require receiving a type of processing are selected by moving a cursor shown here as an arrow, for example, to the position of any of the selected image signs and conducting a predefined inputting procedure using an input unit 2 of an appropriate form such as a mouse, and then, these selected image signs are understood by the image-processing unit 1 as those subjected to the processing.

If desired, the image-processing unit 1 may display these selected image items in a manner distinguishable from other image items, for example, by changing the associated brightness (the selected image items are indicated by hatching in the drawing).

The image-processing unit 1 is configured so as to assume that the image selection step is completed when and if a next instruction or the like is input for processing (for example, moving

or revising) the selected image items such as image signs and to progress with the due processing of the image items.

When performing operations associated with a process of changing an image, in which, in particular, the changed image comprises a number of mutually connected image signs as shown in the drawing, it is often required to process a number of mutually connected image items in succession in which it is required to start processing an image sign that is connected by a line with the image sign of which the processing has just been completed.

The present invention is concerned with the objective of offering a method for an image-selecting process according to which the selection operation required under a situation as described above becomes simpler because the image item connected to the image item of which the processing has just completed is automatically selected.

#### (Means for solving problem)

Fig.1 is a block diagram showing the configuration associated with the present invention.

The drawing is concerned with the configuration of an image selecting process, which, in particular, assumes an apparatus comprising an image processing unit (10), an image searching unit (11), a display unit (4) and an input unit (12), wherein:

the image-processing unit (10) has the display unit (4) display images accordingly to image data pieces (3), selects an image accordingly to a selection instruction of a preassigned form input via the input unit (12) and performs a process of specifying the selected image as a processed-object;

the image-searching unit (11) is activated when receiving a next selection instruction of a preassigned form;

the image-searching unit (11) identifies an image that has a predetermined connection relation with the currently selected image by making reference to a connection relation data set (14) and reports thus identified image to the image-processing unit (10); and

the image-processing unit (10) applies the preassigned type of processing by regarding newly the reported image as the selected image.

#### (Operation)

According to the above-described processing method, the required selection operation becomes simpler because images relating to a selected image are automatically selected, once the image is selected at the beginning.

**(Embodiment)**

In accordance to an embodiment associated with the present invention, the image-processing unit 10 shown in the drawing of Fig.1 generates the connection-relation data set 14 as well as the image-related data sets 3. The image-related data sets 3 are concerned, for example, with various image signs and lines connecting between these image signs, and include an identification name and an image data set concerned with each of the image items. The connection-relation data set 14 is a list specifying the connection relations between the image signs, for example, by linking the image signs represented respectively by the identification names.

The user of the system associated with the present embodiment is required, for example, to issue an instruction by moving a cursor on a desired image item in same way as required when operating with the prior art system for selecting an image sign or the like that is subjected to a modifying process at the first time.

The image-processing unit, when a next selection instruction is input via the input unit 12 such as a preassigned set of key-inputs while in a state in which one of the image items is selected, activates the image-searching unit 11 and reports to it the identification name of the currently selected image item.

The image-searching unit 11, in response, searches the connection-relation data set 14 for an identification name representing the image item connected with the image item corresponding to the reported identification name and report<sup>S</sup>~~X~~ back the found identification name to the image-processing unit 10. The image-processing unit 10, then, regards the image item corresponding to the reported identification name being selected newly as a processing object and performs a process accordingly to an instruction entered via the input unit 12. According to this embodiment, the selected image item is displayed so as to be recognizable, for example, in a manner in which the selected image item is displayed in a preassigned specific manner.

The image-searching unit 11 is configured to point out one image item at a time even in a case in which there are more than one image items connecting in parallel with a currently selected image item in a certain manner, for example, in the order in which the image items are contained in the list constituting the connection relation data set. In addition, it is configured so that the user can visually determine, in a manner as explained earlier, the displayed selection state and change the next selected image item, if so desired, by inputting a next selection instruction and have the image items following thus selected one are selected in succession afterwards.

Fig.2 illustrates an example of screen displays associated with the above process flow. By inputting a next selection instruction when in a situation as shown by the drawing in Fig.2 (a) in which the circle-shape image sign in the center of the drawing is selected, the triangle-shape image sign that is connected to the circle sign is selected. If it is so desired to select the other triangle instead of this particular triangle-shape image sign or after completing the processing of this

particular triangle-shape image sign, the other triangle-shaped image sign can be selected as shown by the drawing in Fig.2 (c) by further inputting a next selection instruction.

According to the above explanation, only the image signs are selected by the next selection instructions, but it can be configured so that the connecting lines may also become selectable while in order to have the system operate as above it may be necessary to have the connection relation data set 14 include appropriate pieces of data associated with the lines.

**(Benefit of invention)**

As become clear from above explanation, the present invention is associated with a remarkable industrial benefit in which the image selection operation becomes simpler, as the present invention allows for automatically selecting image items connected to a selected image item in association with the need of selecting image items one by one as image items constituting the processing objects processed by an image processing computer.

**Fig.1**

Block diagram indicating present invention configuration

- 3: Image-related data sets
- 4: Display unit
- 10: Image processing unit
- 11: Image searching unit
- 12: Input unit
- 14: Connection relation data set

**Fig.2**

Explanatory drawings of displays associated with an embodiment of the present invention

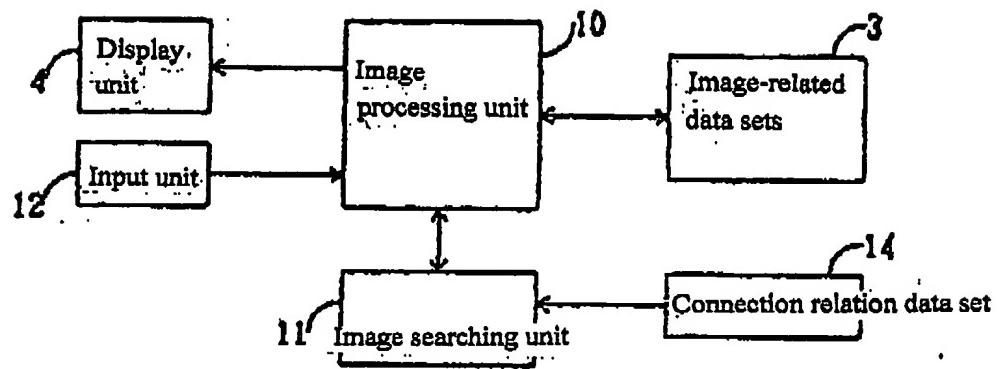
**Fig.3**

Block diagram indicating an example of the prior art configuration

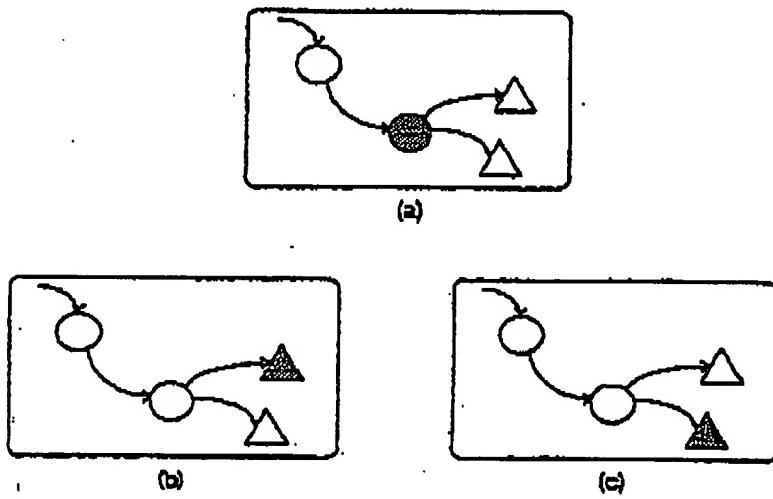
- 1: Image processing unit
- 3: Image-related data set
- 4: Display unit

**Fig.4**

Explanatory drawing of displays associated with the prior art system



**Fig.1**  
Block diagram indicating present invention configuration



**Fig.2**  
Explanatory drawings of displays associated with an embodiment of the present invention

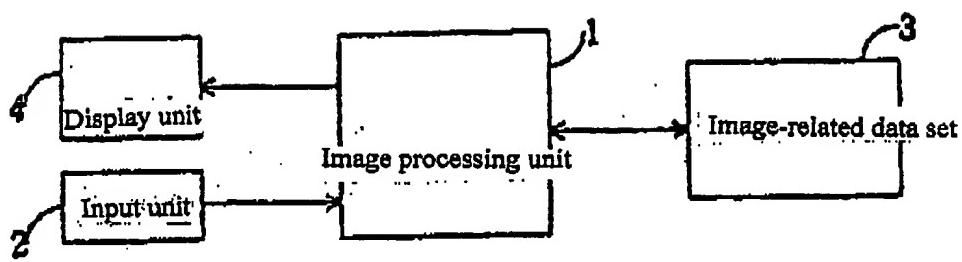


Fig.3

Block diagram indicating an example of the prior art configuration ..

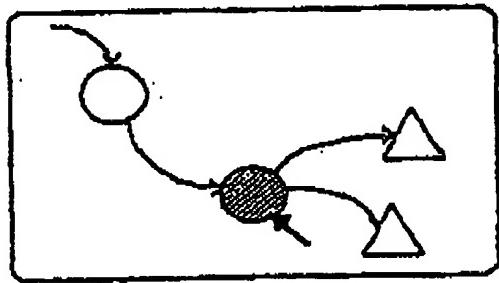


Fig.4

Explanatory drawing of displays associated with the prior art system